What is claimed is:

1. A fixture for aligning the inlet end of a transition with a combustor component in a turbine engine comprising:

a flange adapted for mounting to a combustor component;

an elongated mandrel having proximal and distal ends, the mandrel being selectively coupled to and extending away from the flange along a target axis of alignment; and

a plurality of radially extendable jaws coupled to the distal end of the mandrel, each of the plurality of jaws including an inner tip and an outer tip, wherein the outer tips are radially extendable in a cooperative manner such that each of the outer tips move a substantially equal radial distance from the target axis of alignment;

whereby the outer tips engage an inner peripheral surface of a transition so that the transition is properly located to the target axis of alignment.

2. The fixture of claim 1 wherein the flange includes at least one protrusion for centering the fixture on a combustor component.

3. The fixture of claim 1 further including a plate secured to the distal end of the mandrel, the plurality of radially extendable jaws being movably retained on the plate.

4. The fixture of claim 1 wherein the plurality of radially extendable jaws are biased radially inward.

5. The fixture of claim 1 wherein the mandrel is selectively coupled to the flange by a carriage attached to the proximal end of the mandrel, the carriage is selectively coupled to the flange such that the mandrel is held in one of a fixed relation to the flange or a sliding relation to the flange.

6. The fixture of claim 5 wherein the carriage is held in fixed relation to the flange by at least a bolt.

7. The fixture of claim 5 further including a pair of rails secured to the flange, wherein the carriage slidably engages the pair of rails.

8. The fixture of claim 5 further including a first positional gauge secured to the flange so as to substantially engage at least a portion of the carriage, wherein the first dial indicator measures movement of the carriage.

9. The fixture of claim 1 further including a first control rod extending longitudinally through the mandrel, the first control rod having a proximal end and a distal end, a first user control knob being connected to the proximal end of the first control rod, a flared fitting being connected to the distal end of the first control rod, wherein the inner tips of the plurality of radially expandable jaws engage at least the flared fitting.

10. The fixture of claim 9 wherein actuation of the first user control knob causes axial movement of the first control rod.

11. The fixture of claim 9 further including a second control rod extending longitudinally through the mandrel, the second control rod having a proximal end and a distal end, a second user knob being connected to the proximal end of the second control rod.

12. The fixture of claim 11 wherein at least a portion of the second control rod is disposed substantially coaxially within the first control rod.

13. The fixture of claim 11 wherein at least a portion of the second control rod is rotatable.

14. The fixture of claim 9 wherein a second positional gauge is attached to the distal end of the second control rod, the second positional gauge being circumferentially rotatably positioned so as to sweep inside of the transition.

15. A method of aligning the inlet end of a transition with the combustor section of a turbine engine comprising the steps of:

(a) providing a combustor portal having a flange portion transitioning into a hollow body portion;

(b) providing a generally hollow transition duct having an inlet end, an outlet end, and an inner periphery;

(c) providing a bracket for supporting at least a portion of the inlet end of the transition, the bracket extending between the inlet end of the transition and a surface of the combustor section of the turbine engine;

(d) fastening the bracket to the transition and the combustor surface so that the bracket can be adjustably positioned;

(e) providing a fixture having a flange, an elongated mandrel, and a plurality of radially extendable jaws, the flange being adapted for mounting to a corresponding surface on the combustor portal so as to substantially center the fixture on the portal, the elongated mandrel having proximal and distal ends, the mandrel being selectively coupled to and extending away from the flange along a target axis of alignment, and the plurality of radially extendable jaws coupled to the distal end of the mandrel, each of the plurality of jaws including an inner tip and an outer tip, wherein the outer tips are radially extendable in a cooperative manner so as to maintain a substantially equal radial distance from the target axis of alignment;

(f) securing the fixture to the combustor portal by attaching the flange of the fixture to flange portion of the combustor portal such that at least a portion of distal end of the mandrel including the jaws extends beyond the body portion of the combustor portal;

(g) placing the inlet end of the transition over the extending portion of the mandrel; and

(h) extending the plurality of jaws radially outward such that each of the outer tips engage the inner periphery of the transition, wherein the inlet end of the transition is held substantially along the target axis of alignment.

16. The method of claim 15 further including the steps of:

(i) measuring the gap between a portion of the bracket and the combustor surface; and

(j) installing one or more shims between a portion of the bracket and the combustor surface.

17. The method of claim 16 further including the steps of:

(k) securing the bracket to the combustor surface;

(l) radially retracting the plurality of jaws out of engagement with the inner peripheral surface of the transition; and

(m) removing the fixture from the combustor component.

18. The method of claim 15 further including the steps of:

(n) zeroing the first positional gauge;

(o) selectively decoupling the carriage from the flange;

(p) moving the carriage away from the axis of alignment until the bracket engages the combustor surface

(q) using the first positional gauge to measure the movement of the carriage; and

(r) installing one or more shims between the bracket and the combustor surface in accordance with the measurement of the first positional gauge.

19. The method of claim 18 further including the steps of:

(s) securing the bracket to the combustor surface;

(t) radially retracting the plurality of jaws out of engagement with the inner peripheral surface of the transition; and

(u) removing the fixture from the combustor component.